

INTEREST DIFFERENTIATION AND PROFILE ELEVATION: INVESTIGATING  
CORRELATES OF DEPRESSION, CONFIDENCE, AND VOCATIONAL IDENTITY

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Using a correlational design, this study examined relationships among and between differentiation, profile elevation, gender and educational level (predictors) and depression, confidence, and vocational identity (criterion). Clients presenting for counseling services ( $n = 90$ ) with a career concern at a large, metropolitan university were included in the study.

Six assumptions were examined using three single hierarchical regression analyses to reveal relationships among and between variables. Two research assumptions were confirmed at the .05 level of significance. Bivariate correlations were computed to examine the structure coefficients. Beta weights and structure coefficients were examined to determine the relative contribution of the predictors in the regression model.

Results indicated that differentiation, profile elevation, gender and educational level did not predict significant variance in depression and vocational identity. However, differentiation, profile elevation, and educational level did significantly predict confidence ( $p < .0001$ ).

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## CHAPTER 1

### INTRODUCTION

Holland's 40-year-old theory of vocational choice has become a major force in understanding individual interests and environments in career counseling (Spokane, Luchetta, & Richwine, 2002). According to the theory, six personality types and corresponding environments (Realistic, Investigative, Artistic, Social, Enterprising and Conventional; RIASEC) serve as a basis for facilitating career choice and understanding person/environment fit (Holland, 1973, 1985a, 1997). These six types are typically measured using interest inventories that provide profiles with rank ordered interests on all six dimensions. Assessing interests is an important step in setting the course for career exploration and greater self-understanding.

Foundational to Holland's (1997) theory is the concept of differentiation which refers to the variability of the six scores in a profile of an assessment that measures RIASEC interests (Holland, 1973, 1985a, 1997). Holland (1973) indicated that "some persons . . . are more clearly defined than others. For instance, a person may closely resemble a single type and show little resemblance to other types (Holland, 1973, p. 4) "In contrast, a person who resembles many types . . . would be labeled undifferentiated or poorly defined" (Holland, 1973, p.4).

Differentiated profiles enable career counselors to help clients systematically and reasonably narrow the amount of occupational information to be considered during a career exploration process. Undifferentiated profiles, sometimes referred to as flat profiles (Donnay, Morris, Schaubhut, & Thompson, 2005; Harmon, Hansen, Borgen, & Hammer, 1994), do little to help counselors provide direction for the career exploration process. Estimates indicate that approximately 20% of profiles are undifferentiated (Darley & Hagenah, 1955; Pusateri, 1995) and career counselors often have difficulty interpreting these profiles (Sackett & Hansen, 1995).

With the incidence of undifferentiated profiles occurring in one out of five profiles, understanding the meaning of such profiles becomes paramount.

Many researchers have examined relationships between differentiation and other independent variables but few have produced noteworthy results (Holland, 1997; Sackett & Hansen, 1995). More recently, researchers (Gottfredson & Jones, 1993; Pusateri, 1995; Swanson & Hansen, 1986) have noted the importance of examining profile elevation in addition to differentiation. At one extreme, some individuals express high interest in all six interest areas (high undifferentiated), whereas at the other extreme, some individuals express low interest in all six interest areas (low undifferentiated) (Holland, 1997). Swanson and Hansen (1986) suggested that the groups be treated separately in future research and suggested that counseling interventions need to be modified for persons with high and low undifferentiated profiles.

Some researchers have identified characteristics of individuals with high undifferentiated profiles (Gottfredson & Jones, 1993; Swanson & Hansen, 1986). Less research, however, has been focused on the meaning of low undifferentiated profiles. Holland (1985b) postulated several explanations for low undifferentiated profiles and indicated that a low undifferentiated profile may mean “the person is young and inexperienced or immature” (p. 29). In addition, he stated specifically that persons with low undifferentiated profiles may be disengaged from their culture, may be self-deprecating, and may lack a sense of identity (Holland, 1985b). Similarly, Campbell and Hansen (1981) indicated that persons with low undifferentiated profiles might be confused, distressed, apathetic, hopeless, and desperate. Both Swanson and Hansen (1986) and Gottfredson and Jones (1993) identified characteristics associated with high undifferentiated profiles but neither provided definitive results of the characteristics associated with low undifferentiated profiles. In response to the lack of research regarding low undifferentiated



profiles, Pusateri (1995) attempted to identify characteristics associated with such profiles. She found that persons with low undifferentiated profiles had less education, scored lower on a measure of confidence and vocational identity, and were more likely to be female (Pusateri, 1995).

In a personal communication Holland (as cited in Pusateri, 1995) “suggested that depression, related to having few competencies and seeing no opportunities, is the most likely cause of low flat profiles” (p. 52). In his theory of vocational choice, Holland (1997) indicated that lack of differentiation “may be a weak sign of desirable personal adjustment, but this interpretation requires clarification” (p. 148). Perhaps Holland might have been overreaching in stating that interest inventory differentiation may imply certain competencies or emotional distress since interest inventories do not assess skills, abilities, or emotional states. Nevertheless, research has not established how or if the construct of differentiation may relate to depression. In a discussion of limitations of their study on profile elevation, Gottfredson & Jones (1993) suggested “it would have been useful to have examined explicit measures of depression for one or more samples” (p. 47). Furthermore, Pusateri (1995) indicated that relationships between depression and low undifferentiated profiles still need to be examined.

Sufficient sample sizes and identifying high and low undifferentiated profiles present a challenge to researchers. Munday, Braskamp, and Brandt (1968) noted the practical difficulty of acquiring a sufficient sample of individuals with undifferentiated profiles for research purposes. In order to identify high and low undifferentiated profiles, researchers have divided their samples using arbitrary cutoffs (Pusateri, 1995) or divided their samples into quartiles using the first and fourth quartile to represent high and low undifferentiated profiles, respectively (Erwin, 1987;

Swanson & Hansen, 1986). Gottfredson and Jones (1993) suggested separating the constructs of differentiation and profile elevation.

In response to concerns presented in professional literature regarding measurement of differentiation and profile elevation (Gottfredson & Jones, 1993; Swanson & Hansen, 1986), this researcher treated differentiation and profile elevation as separate continuous variables. Taking this approach is advantageous for many reasons. Instead of arbitrarily determining cut offs between low and high undifferentiated profiles this researcher used data the way they occur naturally. In addition, treating the variables separately and using statistical analysis to account for amount of differentiation (differentiated or undifferentiated) and level profile elevation (high, average and low) allows the entire sample to be used, thereby increasing the accuracy and power of the statistical analysis.

#### Statement of the Problem

Psychological meaning of low undifferentiated profiles has been studied (Pusateri, 1995), however, the question regarding the role of depression as it relates to differentiation and profile elevation has not been adequately addressed in the literature. An extensive review of professional revealed no studies that assessed relationships between depression and differentiation and between depression and profile elevation. If depression is related to low undifferentiated profiles, career counselors could address these concerns. For example, clients who present with low undifferentiated profiles may be depressed, and career counselors could respond with assessing levels of depression and could address these concerns as a part of the counseling process.

## Goals and Purpose of the Study

The primary goal of this study is to examine relationships among and between depression and differentiation and profile elevation to discern implications for assessment interpretations and for practice. A secondary goal of the study is to examine relationships among and between confidence, vocational identity, gender, and educational level and profile elevation as these variables have also been associated with low undifferentiated profiles (Pusateri, 1995). Another goal of this study is to address methodological concerns regarding measurement of high and low undifferentiated profiles. These goals were pursued for purposes of discerning implications for research and counseling practice. To these ends, differentiation and profile elevation are treated as separate continuous variables, allowing the researcher to statistically account for the amount of differentiation and amount of profile elevation instead of creating arbitrary cutoffs in the sample. A correlational design was used to examine relationships among and between independent variables (differentiation, profile elevation, gender, and educational level) and dependent variables (depression, confidence, and vocational identity).

## Literature Review

Holland's (1973, 1985a, 1997) theory of vocational choice and development provides a theoretical framework with both practical and heuristic value for counselors and researchers. Included in his theory is the concept of interest differentiation defined as a measure of variability of the six scores in a profile of an assessment that measures RIASEC interests (Holland, 1973, 1985a, 1997). Holland observed that some individuals have more clearly defined interests as evidenced by relatively strong interests in one of the RIASEC types compared to individuals with less defined interests who report similar levels of interest in many RIASEC types. Holland

(1985a) theorized positive outcomes for people with more differentiated interests including greater achievement, satisfaction, and stability and by implication, negative outcomes for people with undifferentiated interests (less achievement, satisfaction and stability).

The construct of differentiation has been studied for over six decades (Sackett & Hansen, 1995). Researchers have attempted to understand relationships between differentiation and numerous variables but few have produced noteworthy results (Holland, 1997; Sackett & Hansen, 1995). During the last 15 years, researchers (Gottfredson & Jones, 1993; Pusateri, 1995; Swanson & Hansen, 1986) have noted the importance of examining profile elevation in addition to differentiation. Swanson and Hansen (1986) explain that at one extreme, some individuals express high interest in all six interest areas and are, by definition, undifferentiated. At the other extreme, some individuals express low interest in all six interest areas and are also, by definition, undifferentiated. Swanson and Hansen (1986) observed that most researchers studying differentiation have treated individuals “with all strong interests (all high scores) . . . as equivalent to subjects with weak interests (all low scores)” (p. 163). However, Swanson and Hansen (1986) found differences between the two undifferentiated groups, providing one explanation for why, in the past six decades, researchers have not been successful in understanding relationships between differentiation and many variables (Sackett & Hansen, 1995).

Relationships between depression and low undifferentiated RIASEC profiles have not been empirically examined although the relationship is inferred by some practitioners (Harmon et al., 1994). Researchers and practitioners seem to agree that assisting individuals with low undifferentiated profiles is difficult (Campbell & Hansen, 1981; Sackett & Hansen, 1995). A

discernable correlation between depression and profile elevation and differentiation may point to more appropriate interventions for these individuals.

This review provides an overview of theoretical explanations for undifferentiated profiles and research regarding (1) differentiation and maladjustment, (2) differentiation and depression, (3) depression and career concerns, (4) differentiation and vocational identity, and (5) differentiation and confidence. In addition, I provide an overview of research regarding differentiation and profile elevation and previous operational measures of differentiation and profile elevation.

### *Theoretical Explanations for Undifferentiated Profiles*

Holland (1985b) postulated several explanations for undifferentiated profiles and indicated that an undifferentiated profile may mean “the person is young and inexperienced or immature” (p. 29). In addition, he stated specifically that low undifferentiated profiles “may go with a lack of involvement in culture, self-deprecation, and a diffuse sense of identity” (Holland, 1985b, p. 29). Similarly, Campbell and Hansen (1981) indicated that persons with very few “like” responses on the Strong Interest Inventory® (SII) assessment (CPP, Inc., Palo Alto, CA, [www.cpp.com](http://www.cpp.com)) (i.e., low undifferentiated) “indicates, at best, occupational confusion, and, at worst, considerable personal distress or apathy, perhaps a sense of hopelessness and even desperation” (p. 95). Individuals with undifferentiated interests, especially those who have low interest in all RIASEC interest areas (low undifferentiated), are often a challenge for counselors who use interest assessments to help facilitate career choice and development (Pusateri, 1995; Sackett & Hansen, 1995). Estimates indicate approximately 20% of interest inventory profiles are undifferentiated and this has been the case for over 50 years despite numerous revisions and

measures of interests (Darley & Hagenah, 1955; Pusateri, 1995). With the incidence of undifferentiated profiles occurring in one out of five profiles, understanding the meaning of such profiles becomes paramount.

### *Differentiation and Maladjustment*

Although studies of relationships between differentiation and depression have not been found in professional literature, a longstanding history exists of associating lack of differentiation with maladjustment. As early as the 1940's, researchers suggested that individuals with undifferentiated interests would exhibit some sort of personal or educational maladjustment (Darley, 1941). Holland (1985b) also suggested that individuals with low undifferentiated interests may be more self-deprecating and may have diffuse identities. Researchers (Gottfredson & Jones, 1993; Pusateri, 1995) have encouraged empirical examination of relationships between differentiation and profile elevation and depression, however, after an extensive review of professional literature, no studies examining these constructs have been identified. There is, however, a history of examination of measure of maladjustment and differentiation.

Crites (1960) examined relationships between differentiation and a measure of adjustment (ego strength) using an archival sample of 100 men who received career counseling services at a university counseling center. Using the Strong Vocational Interest Blank, Crites divided his sample into differentiated and undifferentiated groups, which he referred to as patterned and unpatterned, based on the identification of one or more primary interests. Using the Es scale on the Minnesota Multiphasic Personality Inventory™ (MMPI) assessment (NCS Pearson, Inc., Minneapolis, MN, [www.pearsonnncs.com](http://www.pearsonnncs.com)) for a measure of ego strength, Crites found a significant correlation between ego strength and interest differentiation. Crites concluded

that individuals with undifferentiated interests are likely to have less ego strength and suggested that the counseling focus shift from career-related concerns to personal counseling for the purpose of facilitating improved ego functioning. Crites hypothesized that if counselors can help clients improve ego functioning it may improve development of interest differentiation.

In an attempt to extend Crites' (1960) research, Carnes (1964) examined relationships between a measure of maladjustment (abnormality) and differentiation in a hospitalized psychiatric sample of 40 men. Carnes utilized Crites (1960) method of determining differentiation and used the Multi-dimensional Scale for Rating Psychiatric Patients to measure abnormality (i.e., bizarreness of behavior). Carnes (1964) utilized analysis of variance in a factorial design and found undifferentiated interests were not associated with negative psychiatric abnormality.

Munday, Braskamp and Brandt (1968) examined relationships among and between differentiation and maladjustment in 314 men attending at the University of Iowa. They hypothesized that men with differentiated interests would be more psychologically healthy compared to men with undifferentiated interests. The researchers used participants' scores on the Strong Vocational Interest Blank to place them in three groups based on their amount of differentiation. The researchers used the mean score on the MMPI as the measure of adjustment and found no significant relationship between differentiation and adjustment.

More recently, Gottfredson and Jones (1993) examined profile elevation and differentiation and Neuroticism in an archival samples of male ( $N = 495$ ) and female ( $N = 250$ ) navy recruits. Neuroticism was not associated with differentiation but was negatively correlated with profile elevation for women. Gottfredson and Jones (1993) concluded "profile elevation is an inefficient sign of personal difficulties" (p. 47). Nevertheless, Gottfredson and Jones (1993)

suggested that a more explicit measure of depression should be used to examine relationships between depression and differentiation and profile elevation.

Relationships between maladjustment and lack of differentiation have not been established in professional research literature. However, Holland (as cited in Pusateri, 1995) and Gottfredson and Jones (1993) have suggested a relationship between depression and lack of differentiation may exist and have encouraged continued research to investigate this claim.

### *Differentiation and Depression*

Authors of the 1994 SII technical manual devote a chapter to explanations of low undifferentiated profiles and describe such profiles as “depressed” (Harmon et al., 1994, p. 197). Substantiation of a connection between such profiles and depressive symptomology has not been found. Contrary to what would be expected, an examination of the reference citations within the manual revealed no reference to empirical studies examining a relationship between depression and low undifferentiated profiles. More recently, authors of the SII manual indicate that low undifferentiated profiles may be related to mood (and, by implication, depression) and encourage practitioners to consider if a client may need to “take time to deal with emotional issues” (Donnay et al., 2005, p. 175). An extensive review of professional literature revealed no studies examining a relationship between interest differentiation, profile elevation, and depression. It is evident that a gap in professional research literature exists that needs to be addressed.

### *Depression and Career Concerns*

The U.S. Department of Health and Human Services (2002) estimates that 12.5 million adults met diagnostic requirements for major depression in 2001. On college campuses, concerns



about prevalence of depression symptoms are evident. In a recent study, 53% of college students stated they experienced depressive symptoms since beginning college (Furr, Westefeld, McConnell, & Jenkins, 2001). Considering the incidence of adult depression and increasing reports of depression on college campuses (American College Health Association, 2005; Furr et al., 2001), it is important for counselors to understand how depressive symptoms may influence the career counseling process. Researchers acknowledge that career counseling cannot be separated from a broader psychological context (Krumboltz, 1993; Lucas, 1992). Lucas (1992) examined differences between 139 career help-seekers and non-career help seekers on a university campus and found that college age students seeking career assistance are similar to students seeking non-career assistance relative to their expressed emotional distress. Lucas, Skokowski, and Ancis (2000) conducted a qualitative study to examine career decision-making themes for women who presented for counseling in a university center. They found that women receiving career counseling and interest assessment also received “life counseling” which included attention to general concerns regarding depression, lack of confidence and relationships (Lucas et al., 2000, p. 324). Depression has also been associated with several kinds of career difficulties including career indecision (Saunders, Peterson, Sampson, & Reardon, 2000). Depression may also be related to differentiation and profile elevation.

### *Differentiation and Confidence*

Incorporation of measures of confidence in interest assessment is one of the most important trends in career-related research (Betz & Borgen, 2000). This is evidenced by incorporation of matched levels of confidence for each of the RIASEC interests on the SII (Donnay et al., 2005; Harmon et al., 1994). A review of professional literature revealed one

research study that examined relationships between differentiation and confidence. In a sample of 1071 displaced workers, Pusateri (1995) found that 45% ( $p < .001$ ) of individuals with low undifferentiated interests scored lower on a measure of confidence. Additional research is needed to verify this relationship and also determine how confidence may be related to other variables that have been associated with low undifferentiated profiles including vocational identity, gender and education (Pusateri, 1995).

### *Differentiation and Vocational Identity*

Holland (1997) indicated that differentiation is an indirect measure of how well individuals define themselves. A more direct measure is Holland's construct of vocational identity as measured by the Vocational Identity Scale on the My Vocational Situation assessment (Holland, Daiger, & Power, 1980). The Vocational Identity Scale measures the "clarity of a person's vocational goals and self-perceptions" (Holland, 1997, p. 33). Holland (1985a) theorized that a relationship exists between differentiation and vocational identity. Using several measures of both differentiation and vocational identity Leung, Conoley, Scheel, and Sonnenberg (1992) found that differentiation and vocational identity were not related in a sample of 564 high school juniors. Leung et al. (1992) distinguished between high and low undifferentiated profiles based on Swanson and Hansen's (1986) recommendation and also found no significant correlations with vocational identity. Leung et al. (1992) recommended that both differentiation and vocational identity continue to be measured separately in future research. Pusateri (1995) found significant relationships between vocational identity, differentiation and profile elevation. However, the relationship was in the opposite direction than expected. In a sample of 1071 displaced workers, older individuals aged 40 and older had lower

undifferentiated profiles compared to individuals aged 20-30. Professional research is mixed regarding relationships between differentiation and vocational identity and additional research is needed to clarify relationships between these two constructs.

### *Differentiation and Profile Elevation*

Researchers have attempted to understand relationships between differentiation and numerous variables but few have produced noteworthy results (Holland, 1997; Sackett & Hansen, 1995). During the last 15 years, researchers (Gottfredson & Jones, 1993; Pusateri, 1995; Swanson & Hansen, 1986) have noted the importance of examining profile elevation in addition to differentiation. Swanson and Hansen (1986) explain that at one extreme, some individuals express high interest in all six interest areas and are, by definition, undifferentiated. At the other extreme, some individuals express low interest in all six interest areas and are also, by definition, undifferentiated. This dual directional pattern may provide one explanation for why, in the past six decades, researchers have not been successful in understanding relationships between differentiation and many variables (Sackett & Hansen, 1995).

Researchers (Gottfredson & Jones, 1993; Pusateri, 1995; Swanson & Hansen, 1986) have noted the importance of examining profile elevation in addition to differentiation. Swanson and Hansen (1986) indicated that individuals with high and low undifferentiated profiles do have distinct differences. In comparing a sample of college students' high undifferentiated profiles ( $N=45$ ) and low undifferentiated profiles ( $N=37$ ), Swanson and Hansen (1986) found that these two groups differ with respect to educational functioning and achievement. Specifically, they found that individuals with high undifferentiated profiles had higher grades and were more likely to persist in college. Swanson and Hansen (1986) clarified that clients who present with strong

interests in many areas (high undifferentiated interests) compared to individuals with few interest areas (low undifferentiated) are both considered undifferentiated or poorly defined according to Holland's theory but do have distinct differences. Individuals with high undifferentiated interests may need assistance choosing from many options whereas individuals with low undifferentiated interests may need assistance with expanding career options. Consequently, Swanson and Hansen (1986) suggested that counseling interventions need to be modified for persons with high and low undifferentiated profiles and argued that the groups be treated separately in future research.

Erwin (1987) investigated relationships between differentiation and profile elevation in relation to personal development, career decision, and achievement in a sample of 349 college freshmen using the ACT Interest Inventory to assess interest in six domains that correspond with Holland's RIASEC worker personality and work environment categories. Utilizing a multivariate analysis of variance, Erwin found that differentiated students were more personally developed than undifferentiated students as evidenced by higher scores on the Student Development Task Inventory. In addition, Erwin (1987) found that "high differentiated students had higher achievement test scores on English and Social Science subtests scores than did low undifferentiated students" (p. 110). No significant differences were found related to career decision. In contrast to previous research (Swanson & Hansen, 1986), no significant differences were found with respect to profile elevation.

Gottfredson and Jones (1993) examined profile elevation and differentiation in four separate archival samples. The four samples included predominantly African American middle school students ( $N = 249$ ), high school students (11<sup>th</sup> graders) ( $N=1,005$ ), male ( $N=495$ ) and female ( $N=250$ ) navy recruits, and bank tellers ( $N=345$ ). Five indices of profile elevation and

differentiation were calculated for all four samples. Gottfredson and Jones (1993) operationally defined differentiation and profile elevation separately but did not use statistical analyses to account for interaction effects between the two variables. Instead they examined relationships between differentiation and profile elevation separately and found that profile elevation was negatively correlated with achievement scores and school grades in a sample of middle school students. In addition, involvement in extracurricular activities was positively correlated with profile elevation. In a sample of bank tellers, profile elevation and differentiation were positively correlated with more education and the perception of more employment alternatives. Neuroticism was not associated with differentiation but had a small but significant negative correlation with profile elevation.

Both Swanson and Hansen (1986) identified characteristics associated with high undifferentiated profiles but did not provide definitive results of characteristics associated with low undifferentiated profiles. In response to lack of research regarding low undifferentiated profiles, Pusateri (1995) attempted to identify characteristics associated with such profiles. Using a sample of 1071 displaced workers, the researcher examined relationships between low undifferentiated profiles and hope, confidence, readiness, and vocational identity using discriminant analysis. In addition, she examined relationships between low undifferentiated profiles and demographics (e.g., sex, age, educational level). Results revealed that persons with low differentiated profiles had less education, scored lower on a measure of confidence, and scored lower on a measure of vocational identity. In addition, females were more likely to have low undifferentiated profiles. Pusateri (1995) indicated a need for more research clarifying characteristics of individuals with low undifferentiated profiles and specifically suggested that relationships between differentiation, profile elevation, and depression need to be examined.

### *Operational Measures of Differentiation and Profile Elevation*

Researchers have disagreed regarding most effective measures of differentiation and many measures of interest differentiation have been used in the past four decades (Holland, 1973; Iachan, 1984; Monahan, 1987; Peiser & Meir, 1978; Sackett & Hansen, 1995; Spokane & Walsh, 1978). When an interest inventory using Holland's RIASEC model is utilized, each profile reveals a rank ordered set of six interests (i.e.,  $X_1$ ,  $X_2$ ,  $X_3$ ,  $X_4$ ,  $X_5$ , and  $X_6$ ) (Iachan, 1984). Holland (1973, 1997) operationally defined differentiation as the highest score minus the lowest score ( $X_1 - X_6$ ) and indicated that the difference between these two scores accounts for both amount of differentiation and profile elevation because both the highest and lowest scores are utilized. Iachan (1984) criticized Holland's measure because it ignores scores in the middle of the profile and very different profiles may share the same differentiation score. Spokane and Walsh (1978) operationally defined differentiation as the difference between the highest and lowest summary code ( $X_1 - X_3$ ). Monahan (1987) operationally defined differentiation as the difference between the two most preferred scores ( $X_1 - X_2$ ). These measures appear to more accurately measure differentiation but do not assess profile elevation. Peiser and Meir (1978) measured differentiation in percentages of the total score. Most recently, Sackett and Hansen (1986) utilized a differentiation index that used all six RIASEC scores by calculating the standard deviation for each profile. Whereas the standard deviation is a measure of variability, it captures the scores on the entire profile and, in my view, best measures the construct of interest differentiation because differentiation, itself, is a measure of the variability within the profile. However, this measure does not account for profile elevation.

To obtain a measure of profile elevation, researchers have used a two-step process. First, they have used a measure of differentiation, rank ordered the scores, and then divided their

samples into quartiles using the first and fourth quartile to represent high and low undifferentiated profiles, respectively (Swanson & Hansen, 1986; Erwin, 1987). Next, they further divided the undifferentiated group into quartiles based on the highest General Occupational Theme (GOT) score. The first quartile represented low undifferentiated profiles and the fourth quartile represented high undifferentiated profiles. Out of the sample of 615 subjects, 37 subjects had low undifferentiated profiles and 45 had high undifferentiated profiles (Swanson & Hansen, 1986). If a separate measure of profile elevation had been utilized, the entire sample of could have been used in an analysis that allows for two independent variables to be assessed simultaneously. In another case, Pusateri (1995) arbitrarily determined a cutoff score to identify high and low undifferentiated profiles. Creating arbitrary categories in the data introduces error (Celia McCall, personal communication, February 13, 2005). Another study points to preferred measures of profile elevation. Gottfredson and Jones (1993) treated differentiation and profile elevation separately and found that profile elevation was best measured by use of the Highest Single Score or Sum of Scores on the Vocational Preference Inventory.

### Summary of Literature

Research regarding meaning of undifferentiated profiles has been mixed (Holland, 1997; Sackett & Hansen, 1995), and it seems there is little understanding regarding implications of such profiles. Researchers have attempted to identify best measures of differentiation, however, disagreement exists regarding best measures. Sackett & Hansen (1995) offer a sound argument for using standard deviation of the profile as the measure of differentiation; however, Holland (1997) maintains that  $X_1 - X_6$  is the best measure. In addition to the construct of differentiation,

profile elevation seems to be an important measure since individuals with high and low undifferentiated profiles appear to have very different characteristics (Swanson & Hansen, 1986).

As noted above, little research has examined both differentiation and profile elevation. In a rare exception, Pusateri (1995) identified relationships between confidence, vocational identity, gender and educational level and low undifferentiated profiles. However, questions regarding the role of depression as it relates to differentiation and profile elevation have not been adequately addressed in professional literature (Gottfredson & Jones, 1993; Pusateri, 1995). If depression is related to differentiation and profile elevation, career counselors could respond with assessing levels of depression and could address these concerns as a part of the counseling process.

Improved methodology allows for examination of complex relationships between differentiation, profile elevation (independent variables), and depression (dependent variable) and other variables including confidence, vocational identity, gender and educational level, all of which have been associated with either low undifferentiated profiles (Pusateri, 1995). Operationalizing these variables separately and treating them as continuous variables allows use of the entire sample. In addition, an analysis that allows for examination of both individual and combined variance of multiple independent variables may shed light on the complex interaction.



## CHAPTER 2

### METHODS AND PROCEDURES

The question regarding the role of depression as it relates to profile differentiation and profile elevation has not been adequately addressed in the literature (Gottfredson & Jones, 1993; Pusateri, 1995). Clients who present with low undifferentiated profiles may be depressed. Clarifying relationships between depressive symptomology, differentiation and profile elevation is needed. To discern if there are negative correlations between depressive symptomology and differentiation and profile elevation career counselors could respond with assessing levels of depression and could address these concerns as a part of the counseling process.

Single hierarchical regression analyses were used to examine relationships between depressive symptomology and differentiation and profile elevation. In addition, relationships between confidence and vocational identity and gender, educational level, differentiation and profile elevation were examined in an attempt confirm previous research (Pusateri, 1995). This analysis yielded findings that are presented and discussed below, following the requisite definition of terms.

Definition of terms, research assumptions, recruitment of participants, instrumentation, procedures and statistical analyses are discussed prior to other methodological and procedural issues.

#### Definition of Terms

For purposes of this study, the following terms have been operationally defined as indicated below.

*Confidence*: Confidence was operationally defined using the highest Skills Confidence

Theme (SCT) score on the Skills Confidence Inventory (Betz, Borgen & Harmon, 2005). Higher scores indicate more perceived skills confidence whereas lower scores indicate less perceived skills confidence.

*Depression:* Depression was operationally defined by a score ranging from 0 to 63 on the Beck Depression Inventory®-II (BDI-II) assessment (Harcourt Assessment, San Antonio, TX, [www.harcourtassessment.com](http://www.harcourtassessment.com)) (Beck, Steer, & Brown, 1996). Higher scores indicate more symptoms of depression, whereas lower scores indicate fewer symptoms of depression.

*Differentiation:* “The degree to which a person or an environment is well defined is called the degree of differentiation” (Holland, 1997, p. 4). Differentiation was operationally defined by calculating the standard deviation of the six GOT scores for each profile (Sackett & Hansen, 1995). Lower standard deviations indicate less interest differentiation (i.e., flatter profile) and higher standard deviations indicate more differentiation.

*Educational level:* Educational level was operationally defined by the highest level of postsecondary education obtained and included the following categories: freshman, sophomore, junior, senior, graduate one (0-12 hours completed), graduate two (13-24 hours completed), and graduate three (more than 24 hours completed).

*Holland’s RIASEC:* Holland (1973, 1985a, 1997) identified six worker personality types and corresponding work environments (Realistic, Investigative, Artistic, Social, Enterprising and Conventional - RIASEC) that serve as a basis for facilitating career choice and understanding person/environment fit. Developers of the Strong Interest Inventory® (SII) assessment (CPP, Inc., Palo Alto, CA, [www.cpp.com](http://www.cpp.com)) use Holland’s (1985b) RIASEC constructs to measure individual interests.

*Profile:* Results of the SII (Donnay et al., 2005) yield a profile that rank orders individuals' RIASEC interests and they are referred to as General Occupational Theme (GOT) scores.

*Profile elevation:* Profile elevation refers to levels of interest represented on the profile. For the purposes of this study, profile elevation was operationally defined as each individual's highest GOT score.

*Vocational identity:* Vocational identity was operationally defined by a score ranging from 0 to 18 on the My Vocational Situation (MVS; Holland, Daiger, & Power, 1980) assessment. Higher scores represent a stronger sense of vocational identity and lower scores represent a more diffuse sense of vocational identity.

### Research Assumptions

The primary research question is, "What is the relationship between depression and the two profile characteristics of differentiation and profile elevation, respectively, on the SII?" Additional research inquiry examined relationships between the independent variables, differentiation, profile elevation, gender and educational level, and the dependent variables, confidence and vocational identity. The following research assumptions are examined:

1. There is a relationship between level of depression as measured by the BDI-II and amount of differentiation as measured by the newly revised SII.
2. There is a relationship between level of depression as measured by the BDI-II and amount of profile elevation as measured by the SII.
3. There is a relationship between level of confidence as measured by the SCI and level of differentiation as measured by the SII.
4. There is a relationship between level of confidence as measured by the SCI and profile elevation as measured by the SII.

5. There is a relationship between level of vocational identity as measured by the MVS and amount of differentiation as measured by the SII.
6. There is a relationship between level of vocational identity as measured by MVS and amount of profile elevation as measured by the SII.

### Participant Recruitment

Participants were college students who presented for counseling services at a large metropolitan university counseling center over a period of ten months. Research participants were limited to individuals 18 years and older who reported a career concern, although the career concern did not have to be the primary reason for seeking counseling. All participants completed the BDI-II, MVS, SII and SCI.

### Instrumentation

All participants completed the following assessments on-site immediately after the first session or before the third session to allow participants to schedule an adequate amount of time to complete the assessments in one sitting.

#### *Background Information Sheet*

Each participant completed a demographic information sheet (see Appendix B) that included age, gender, educational level, and race/ethnicity.

#### *Beck Depression Inventory-2nd Edition*

The BDI-II (Beck, Steer, & Brown, 1996) was used to measure depressive symptoms. The BDI-II has 21 items, with each item containing four sentences. Participants identified the

statement that most closely resembled their feelings within the past two weeks. Each of the four statements within each question is scored, with the total possible score ranging from 0 to 63. Higher scores indicate more symptoms of depression whereas lower scores indicate fewer symptoms of depression. Four categories of scores help differentiate level of severity including Minimal (0-13), Mild (14-19), Moderate (20-28) and Severe (29-63). Test-retest reliability is reported at .93 and internal consistency reliability is reported at .92 for an outpatient sample and .93 for the comparative normal group (Beck, Steer, & Brown, 1996). Construct validity scores of .93 were found for participants taking the older version of the BDI-II and the newer BDI-II.

### *My Vocational Situation*

The MVS (Holland, Daiger, & Power, 1980) has three scales including Occupational Information, Barriers and Vocational Identity (VI). The VI scale has 18 true/false items with a total score ranging from 0 to 18. The total VI scale score is the total number of false responses. Higher scores indicate stronger vocational identity, which is defined as “the possession of a clear and stable picture of one’s goals, interests, personality, and talents” (Holland, Daiger, & Power, 1980, p. 1).

Holland, Daiger, & Power (1980) reported internal consistency of .86 in sample of high schools students and .89 in college students and workers. Construct validity was established through the development of the instrument and examined in relationship to other variables including age and number and variety of occupations (Holland, Daiger, & Power, 1980). For example, Holland, Daiger, and Power (1980) hypothesized that vocational identity would have moderate correlations with age. Correlations between age and vocational identity for females were .06 and for males was .28. The researchers also hypothesized that vocational identity would

be negatively correlated with number and variety of occupational aspirations. Correlations between number and variety of occupational aspirations and vocational identity in females were -.13 and -.16, respectively. For males, correlations between number and variety of occupational aspirations and vocational identity were -.26 and -.22, respectively.

Holland, Johnston, and Asama (1993) summarized the literature from 1980 to 1992 and found that retest reliability on the VI scale of MVS ranges from .63 to .93 for intervals of one to two weeks and estimated that retest reliability was .75 for intervals of one to three months.

### *Skills Confidence Inventory*

The SCI (Betz et al., 2005) measures individuals' subjective beliefs regarding their confidence as it relates to their interests. The SCI is designed to be administered with the SII, and the six General Occupational Themes (GOTs) used in the SII are also used in the SCI to provide a matched measure of perceived confidence referred to as Skills Confidence Themes (SCTs). The SCTs have the same names as the six GOTs (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional). Sixty task and activity items (10 items for each scale) are presented and individuals respond on a "5-point scale ranging from 'No confidence at all' (1) to 'Complete confidence (5)'" (Betz et al., 2005, p. 5-6). A computer scores the scales and skills confidence for each scale is reported individually and in relationship to the GOTs.

In a sample of 1,853 women and men (706 college students and 1,147 employed adults), internal consistency reliability (Cronbach's alpha) "for each scale range[d] from .84 to .87 in the student sample and from .84 to .88 in the employed adult sample" (Betz et al., 2005, 9). In a sample of 113 college students Parsons and Betz (as cited in Betz et al., 2005) reported the following test-retest reliabilities: Realistic, .83; Investigative, .86; Artistic, .85; Social, .87;

Enterprising, .84; and Conventional, .84. Betz and Gwilliam (as cited in Betz et al., 2005) examined convergent validity and found a .74 correlation between the SCI and the Self-Efficacy Questionnaire (Lenox & Subich, 1994), which also measures confidence in relationship to the RIASEC themes.

### *Strong Interest Inventory*

The SII (Donnay et al., 2005) has four scales including General Occupational Themes (GOTs), Basic Interests Scale (BISs), Occupational Scales (OS), and Personal Style Scales (PSS). The six GOTs are a measure of Holland's RIASEC. The 30 BISs represent more specific activities associated with each of the GOTs. The 244 OSs represent specific occupations that can be classified by the GOTs and allow clients to compare their interests to other individuals who report satisfaction within that occupation. The PSs measure "preferences for and comfort with broad styles of living and working" and include Work Style, Learning Environment, Leadership Style, Risk Taking, and Team Orientation (Donnay et al., 2005, p. 135). Only the GOTs were used in this study.

In the most recent revision of the SII using a "General Representative Sample of 2,250 women and men" Cronbach's alpha (a measure of homogeneity) for the six GOTs were as follows: Realistic, .92; Investigative, .92; Artistic, .95; Social, .92; Enterprising, .91; and Conventional, .90 (Donnay et al., 2005, p. 37). Using the same sample, test-retest reliabilities for the six GOTs were as follows: Realistic, .89; Investigative, .88; Artistic, .84; Social, .85; Enterprising, .85; and Conventional, .86.

In terms of validity, the SII has been touted as the best inventory measuring Holland's RIASEC (Tracey & Rounds, 1993). Hansen and Campbell (as cited in Donnay et al., 2005)

reported correlations between the Vocational Preference Inventory and SII of .77 demonstrating construct validity. Furthermore, Savickas, Taber, and Spokane (as cited in Donnay et al., 2005) compared results from participants who completed five different interest assessments and using a “multi-trait, multi-method matrix provided solid evidence of convergent and discriminate validity” (p. 42).

### Procedures

I obtained permission from the director a large metropolitan college counseling center to collect assessment data from clients presenting for counseling with a career concern. After obtaining approval from the institutional review board I provided training sessions for the counselors who collected data. Training included a review of the administration, scoring and interpretation of all assessments. Inclusion criteria were that clients be at least 18 years of age and a career concern, although the career concern did not need to be the primary reason for seeking counseling. Counselors offered participation in the research to clients who met inclusion criteria and provided them with the informed consent (See Appendix A). All assessments were numbered and de-identified to ensure client confidentiality.

When the clients presented for counseling services, the counselors provided an informed consent (See Appendix A) for participation in the study as a part of the intake procedure. After clients agreed to participate and signed consent forms, counselors provided the clients with a Background Information Sheet (See Appendix B) and assessments including the BDI-II, MVS, SII and SCI. All participants completed the Background Information Sheet and assessments onsite immediately after the first session or before the third session and all assessments were completed in one sitting. The combined SII and SCI were scored at the site of administration



using computerized scoring. The BDI-II and MVS were hand scored by counselors at the site of administration. To protect client confidentiality, names of participants were blackened on copies of protocols. Anonymous protocols and a demographic sheet were returned to the investigator on a monthly basis.

### Statistical Analyses

This study is qualitative and descriptive in nature. I used a correlational design and examined relationships among and between differentiation, profile elevation, gender and educational level (independent variables) and depression, confidence, and vocational identity (dependent variables). Treating differentiation and profile elevation as separate continuous variables represents a methodological improvement over past research (Pusateri, 1995; Swanson & Hansen, 1986) and allowed the researcher to use the data the way they occur naturally. In addition, using statistical analysis to distinguish between differentiation and profile elevation allowed inclusion of the entire sample, thereby increasing the accuracy and power of the statistical analyses.

Single hierarchal regression analyses were used to examine relationships among and between variables. The first block in the first hierarchal regression was depression (criterion) with gender (predictor) and educational level (predictor). Differentiation and profile elevation were used in the second block. The first block in the second hierarchal regression was confidence (criterion) with gender (predictor) and educational level (predictor). Differentiation and profile elevation were used in the second block. The first block in the third hierarchal regression was vocational identity (criterion) with gender (predictor) and educational level (predictor). Differentiation and profile elevation were used in the second block.

## CHAPTER 3

### RESULTS AND DISCUSSION

This chapter includes demographics of participants, findings, results of statistical analyses, limitations and discussion of this research. Implications for counseling and recommendations for future research are also discussed.

#### Participants

Participants were undergraduate and graduate college students ( $N=90$ ) who presented for counseling services with a career concern at a university counseling center over a period of ten months. Although participants were not randomly selected for participation, all students who met inclusion criteria were given the opportunity to participate in the research study. Therefore, results of the study should be considered generalizable to the population, that is, college students seeking counseling services with a career concern.

The participants included 41 males and 49 females with a mean age of 24.7 ( $SD=7.6$ ) and a range of 18-55. Forty-three participants (47.8%) identified their race/ethnicity as Caucasian. Forty-seven individuals identified themselves with a non-majority racial-ethnic group. Of these, nine were African American (10%), 22 were Hispanic American (24.4%), nine were Asian American (10%), and seven reported “other” race/ethnicity (7.8%) (See Table 1).

The educational level of participants ranged from freshman to graduate students (See Table 2). All participants completed the Beck Depression Inventory®-II (BDI-II) assessment (Harcourt Assessment, San Antonio, TX, [www.harcourtassessment.com](http://www.harcourtassessment.com)), My Vocational Situation MVS) assessment, Strong Interest Inventory® (SII) assessment (CPP, Inc., Palo Alto, CA, [www.cpp.com](http://www.cpp.com)) and Skills Confidence Inventory (SCI) assessment.

Table 1

*Descriptive Statistics for Race/Ethnicity*

	Number	Percent
Caucasian	43	47.8
African American	9	10
Hispanic	22	24.4
Asian	9	10
American Indian	0	0
Other	7	7.8
Total	90	100

Table 2

*Descriptive Statistics for Educational Level*

	Number	Percent
Freshman	14	15.6
Sophomore	21	23.3
Junior	28	31.1
Senior	16	17.8
Graduate (0-12 hours)	9	10
Graduate (13-24 hours)	0	0
Graduate (>24 hours)	2	2.2
Total	90	100

Prior to conducting statistical analyses, examination of the frequencies and means of educational level revealed an imbalance, with far fewer graduate students represented. Therefore, the three graduate educational categories were collapsed into one group. In keeping with the univariate normality assumption in multiple regression (Hair, Black, Babin, Anderson, & Tatham, 2006), the continuous data were examined to evaluate whether the continuous variables were normally distributed. Hair et al. (2006) proposed the following formulae to assess normality

as a rule of thumb based on the skewness and kurtosis values:  $z_{skewness} = \frac{skewness}{\sqrt{\frac{6}{N}}}$  and

$z_{kurtosis} = \frac{kurtosis}{\sqrt{\frac{24}{N}}}$  where N is the sample size. If the calculated  $z_{skewness}$  or  $z_{kurtosis}$  exceeds the

critical value  $\pm 2.58$  (.01 significant level) for this study, the data is non-normally distributed.

The descriptive statistics including skewness and kurtosis are presented in Table 3. Based on Hair et al.'s rule, all of the continuous variables were in the acceptable range of normal distribution except for depression. As depression was mildly skewed, the log function of data transformation was used (Schumacker & Lomax, 2004). Further examination on the skewness and kurtosis revealed that the transformed depression score was normally distributed. Therefore, the log transformed depression score was used in further data analysis.

Table 3

*Descriptive Statistics – Skewness and Kurtosis*

	<i>N</i>	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Differentiation	90	7.60	2.72	.197	-.627
Profile Elevation	90	62.18	7.39	-.284	.375
Depression	90	11.6	9.67	1.435	2.295
Confidence	90	3.71	.67	-.293	.145
Vocational Identity	90	5.88	3.63	1.050	.960

## Results

Three separate hierarchical regression analyses were conducted to examine relationships between independent and dependent variables and test research assumptions. The alpha .05 level was used to determine statistically significant results. Results are presented in the order of the research of the assumptions.

### *Results for Research Assumptions 1 and 2*

A single hierarchical regression analysis was conducted to examine relationships between variables. Gender, educational level, differentiation and profile elevation were used as independent (predictor) variables and depression was the dependent (criterion) variable. As gender and educational level are categorical, criterion coding (Schumacker & Williams, 1993) was used to recode them, that is, the dependent variable mean of each group in the categorical predictor was used to replace the original nominal value. Therefore, the group means of the dependent variable on the categorical predictors served as the predictors of dependent variable variation. Such coding technique allows “the use of a single vector to represent all categories of the nominal independent variable (instead of multiple dummy coded variables) and the simultaneous use of such vectors with other criterion coded variables in the same regression analysis” (Henson & Hwang, 2002, p. 717).

In the first step, gender and educational level were used because previous researchers (e.g., Pusateri, 1995) found that gender and educational level were associated with low flat profiles. In the second step, measures of differentiation and profile elevation were used to examine how much remaining variance on the criterion variable could be accounted for by these two predictors. In the first step, it was found that  $F(2, 83) = 1.186, p = .310$  indicating that gender and educational level did not account for significant variance in the variance of depression. The adjusted  $R^2 = .004$  indicating that gender and educational level together predicted only .4% of the variance for depression (See Table 4). As the regression was not statistically significant and the adjusted  $R^2$  was small, the salient predictor variable(s) based on the beta weights and structure coefficients (See Table 4) were not examined further. In the second step, differentiation and profile elevation were added as second block predictors and it

was found that  $F(4, 81) = 1.345, p = .260$  indicating that gender, educational level, differentiation and profile elevation did not account for significant variance in the variance of depression. The adjusted was  $R^2 = .016$  indicating that gender, educational level, differentiation and profile elevation together predicted only 1.6% of the variance for depression (See Table 5). Because the four-factor regression model was not statistically significant, beta weights and structure coefficients are reported but are not examined further (See Table 5).

Table 4

*Regression Coefficients, Beta Weights and Structure Coefficients for Gender and Educational Level as Predictors of Depression*

Predictor Variables	Depression			$R$	$R^2$	Adj. $R^2$	$n$	$F$	$p$
	$\beta$	$r_s$	$r_s^2$						
Gender	.119	.809	.654	.167	.028	.004	90	$F(2, 83)=1.186$	.310
Educational Level	.098	.707	.499						

Table 5

*Regression Coefficients, Beta Weights and Structure Coefficients for Gender, Educational Level, Differentiation and Profile Elevation as Predictors of Depression*

Predictor Variables	Depression			$R$	$R^2$	Adj. $R^2$	$n$	$F$	$p$
	$\beta$	$r_s$	$r_s^2$						
Gender	.123	.519	.269	.250	.062	.016	90	$F(4, 81)=1.345$	.260
Educational Level	.110	.495	.245						
Differentiation	-.106	.240	.057						
Profile Elevation	.220	.709	.502						

#### *Results for Research Assumptions 3 and 4*

A single hierarchical regression analysis was conducted to examine relationships between variables. Gender, educational level, differentiation and profile elevation were used as

independent (predictor) variables, and confidence was the dependent (criterion) variable. As gender and educational level are categorical, criterion coding (Schumacker & Williams, 1993) was used as described previously. In the first step, gender and educational level were used because other researchers (e.g., Pusateri, 1995) found that gender and educational level were associated with low flat profiles. In the second step, measures of differentiation and profile elevation were used to examine how much remaining variance on the criterion variable could be accounted for by these two predictors. In the first step, it was found that  $F(2, 87) = 2.754, p = .069$  indicating that gender and educational level did not account for significant variance in the variance of confidence. The adjusted  $R^2 = .038$  indicated that 3.8% of the variance for confidence could be attributed to gender and educational level (See Table 6). As the regression was not statistically significant, and the adjusted  $R^2$  was small, the salient predictor variable(s) based on the beta weights and structure coefficients were not examined further (See Table 6).

Table 6

*Regression Coefficients, Beta Weights and Structure Coefficients for Gender and Educational Level as Predictors of Confidence*

Predictor Variables	Confidence			$R$	$R^2$	Adj. $R^2$	$n$	$F$	$p$
	$\beta$	$r_s$	$r_s^2$						
Gender	-.018	.000	.000	.244	.060	.038	90	$F(2, 87)=2.754$	.069
Educational Level	.245	.997	.994						

In the second step, differentiation and profile elevation were added as second block predictors and it was found that  $F(4, 85) = 15.466, p < .0001$  indicating that gender, educational level, differentiation and profile elevation did account for significant variance in the variance of confidence. The adjusted was  $R^2 = .394$  indicating that the four-factor regression model predicted 39.4% of the variance for confidence (See Table 7).

Table 7

*Regression Coefficients, Beta Weights and Structure Coefficients for Gender, Educational Level, Differentiation and Profile Elevation as Predictors of Confidence*

Predictor Variables	Confidence			$R$	$R^2$	Adj. $R^2$	$n$	$F$	$p$
	$\beta$	$r_s$	$r_s^2$						
Gender	-1.00	.000	.000	.649	.421	.394	90	$F(4, 85)=15.446$	.000
Educational Level	.202	.375	.140						
Differentiation	.026	.485	.235						
Profile Elevation	.597	.943	.889						

Courville and Thompson (2001) argued that if a regression model yields statistically significant results, both beta weights and structure coefficients should be examined to explore the relative contribution of predictor variables. Therefore, a bivariate correlation was computed to examine the structure coefficients of gender, educational level, differentiation and profile elevation. Examination of beta weights and structure coefficients reveal that profile elevation was the most significant predictor, which could account for up to 88.9% of the variance in confidence by itself when other three predictors present. The beta weights and structure coefficients for educational level and differentiation revealed an inconsistent picture. In balancing the data, as educational level has a larger beta weight and a slightly lower structure coefficient than differentiation, educational level could be considered as the second salient predictor that accounts for about 14% of the variance by itself when other three predictors present. Similarly, differentiation could explain up to 23.5% alone, but with a much lower beta weight. Gender was an insignificant predictor in the regression (See Table 7).

Whereas gender was the only variable that did not contribute significantly to the hierarchical regression models, regression analyses were re-conducted excluding gender to generate a more parsimonious model. As with earlier procedures, educational level was used in



the first step, and measures of differentiation and profile elevation were used in the second step, to examine how much variance on confidence could be accounted for by these predictors. In the first step, it was found that  $F(1, 88) = 5.540, p = .021$ , indicating that educational level alone did account for significant variance in confidence. The adjusted  $R^2 = .049$  indicating that 4.9% of the variance for confidence could be attributed to educational level (See Table 8).

Table 8

*Regression Coefficients, Beta Weights and Structure Coefficients for Educational Level as Predictor of Confidence*

Predictor Variables	Confidence			$R$	$R^2$	Adj. $R^2$	$n$	$F$	$p$
	$\beta$	$r_s$	$r_s^2$						
Educational Level	.245	.997	.994	.243	.059	.049	90	$F(1, 88)=5.540$	.021

In the second step, differentiation and profile elevation were added as second block predictors, and it was found that  $F(3, 86) = 20.126, p < .0001$ , indicating that educational level, differentiation and profile elevation combined did account for significant variance in the variance of confidence. The  $R^2$  change (.353) indicates that differentiation and profile elevation were found to explain a significant additional variance after controlling for the variance accounted for by educational level. The adjusted  $R^2 = .392$ , indicating that the three-factor regression model predicted 39.2% of the variance for confidence (See Table 9).

In the three-factor regression model, examination of beta weights and structure coefficients reveal that profile elevation was the most significant predictor with the largest values of  $\beta$  and structure coefficient, which could account for up to 90.6% of the variance in confidence by itself when other two predictors present. Relative contributions of educational level and differentiation do not present a clear picture in this three-factor model. Differentiation has a

larger structure coefficient but with a much smaller negative  $\beta$  value. Education level, on the other hand, has a smaller structure coefficient but a relatively larger  $\beta$  value and both are in the same direction. Therefore, educational level was consistent in this prediction model and accounts for 14.3% of the variance by itself when other two predictors are present. Similarly, differentiation could explain up to 24% alone but with a much lower negative beta weight (See Table 9).

Table 9

*Regression Coefficients, Beta Weights and Structure Coefficients for Educational Level, Differentiation and Profile Elevation as Predictors of Confidence*

Predictor Variables	Confidence			$R$	$R^2$	Adj. $R^2$	$n$	$F$	$p$
	$\beta$	$r_s$	$r_s^2$						
Educational Level	.196	.379	.143	.642	.412	.392	90	$F(3, 86)=20.126$	.000
Differentiation	-.022	.490	.240						
Profile Elevation	.608	.952	.906						

#### *Results for Research Assumptions 5 and 6*

A single hierarchical regression analysis was conducted to examine respective relationships between variables. Gender, educational level, differentiation and profile elevation were used as independent (predictor) variables and vocational identity was the dependent (criterion) variable. As gender and educational level are categorical, criterion coding (Schumacker & Williams, 1993) was used to recode them, that is, the dependent variable mean of each group in the categorical predictor was used to replace the original nominal value. Therefore, the group means of the dependent variable on the categorical predictors served as the predictors of dependent variable variation. In the first step, gender and educational level were used because other researchers (e.g., Pusateri, 1995) found that gender and educational level

were associated with low flat profiles. In the second step, measures of differentiation and profile elevation were used to examine how much remaining variance on the criterion variable could be accounted for by these two predictors. In the first step, it was found that  $F(2, 87) = 1.593$ ,  $p = .209$  indicating that gender and educational level did not account for significant variance in the variance of vocational identity. The adjusted  $R^2 = .013$ , indicating that both gender and educational level predicted 1.3% of the variance for vocational identity (See Table 10). For this reason, beta weights and structure coefficients are presented but are not be examined further (See Table 10).

In the second step, differentiation and profile elevation were added as second block predictors and it was found that  $F(4, 85) = 1.011$ ,  $p = .407$ , indicating that gender, educational level, differentiation and profile elevation did not account for significant variance in the variance of vocational identity. The adjusted was  $R^2 = .000$ , indicating that the four-factor model predicted less than 1% of the variance in vocational identity. Since the four-factor regression model was not statistically significant, beta weights and structure coefficients are reported but are not examined further (See Table 11).

Table 10

*Regression Coefficients, Beta Weights and Structure Coefficients for Gender and Educational Level as Predictors of Vocational Identity*

Predictor Variables	Vocational Identity			$R$	$R^2$	Adj. $R^2$	$n$	$F$	$p$
	$\beta$	$r_s$	$r_s^2$						
Gender	-.009	.146	.021	.188	.035	.013	90	$F(2, 87)=1.593$	.209
Educational Level	.189	.999	.998						

Table 11

*Regression Coefficients, Beta Weights and Structure Coefficients for Gender, Educational Level, Differentiation and Profile Elevation as Predictors of Vocational Identity*

Predictor Variables	Vocational Identity			$R$	$R^2$	Adj. $R^2$	$n$	$F$	$p$
	$\beta$	$r_s$	$r_s^2$						
Gender	-.041	.129	.016	.213	.045	.000	90	$F(4, 85)=1.011$	.407
Educational Level	.192	.881	.776						
Differentiation	.066	.424	.179						
Profile Elevation	.054	.394	.155						

### Discussion

Holland's (1973, 1985a, 1997) theory of vocational choice and development provides a theoretical framework for counselors and researchers. Holland observed that some individuals have more clearly defined interests as evidenced by relatively strong interest scores in one of the RIASEC types compared to individuals with less defined interests who report similar levels of interest in many RIASEC types. Holland (1985a) theorized positive outcomes for people with more differentiated interests and, by implication, negative outcomes for people with undifferentiated interests. For example, Holland (1997) indicated that lack of differentiation might indicate personal adjustment difficulties and encouraged examination and clarification of this aspect of his theory. Other researchers have also long suggested that some sort of maladjustment or depressive symptomology may be related to interest differentiation and profile elevation (Darley, 1941; Gottfredson & Jones, 1993; Pusateri, 1995). In the present study, relationships among and between depressive symptomology and profile elevation and differentiation were examined. In addition, relationships between confidence and vocational identity as well as demographic variables such as gender and educational level were examined

since these variables have previously been associated with differentiation and profile elevation (Pusateri, 1995). In contrast to previous studies, a focus on all data for all ninety participants allowed for a more robust analysis. Hierarchical regression analyses were used to examine relationships among and between variables. Results of the current research study partially supported the research assumptions.

Research assumptions one and two indicated that depression would be significantly correlated with differentiation and profile elevation. Gender and educational level were considered as additional predictors of depression based on previous research associating them with low undifferentiated profiles (Pusateri, 1995). An abundance of anecdotal evidence (Cynthia Bing, personal communication, July 17, 2005; Judith Grutter, personal communication, October 4, 2006) suggests practitioners experience individuals with relatively low undifferentiated profiles to have symptoms of depression. However, in the present study, relationships between differentiation and profile elevation and a measure of depressive symptomology were not found to be statistically significant ( $F [2, 83] = 1.186, p = .310$ ).

Results of the current study support Gottfredson and Jones' (1993) conclusion that "profile elevation is an inefficient sign of personal difficulties" (p. 47). Perhaps the absence of significant relationships between differentiation, profile elevation and depressive symptomology can be attributed to characteristics of the present sample. For instance, depression scores were positively skewed, and therefore, were not normally distributed in the present sample. Although the sample had an adequate range of depressive symptomology, more individuals in the study reported relatively lower levels of depressive symptomology compared to those with higher levels of symptomology. Although statistical adjustments were made prior to analysis to transform the data into a normal distribution, differentiation and profile elevation were not found

to predict levels of depressive symptomology. Although in the present study, educational level and depression were not significantly correlated, college students have higher levels of education than the general population and lower levels of education have been associated with low undifferentiated profiles (Pusateri, 1995),

Research assumptions three and four indicated confidence would be significantly correlated with differentiation and profile elevation. Again, gender and educational level were considered additional predictors of confidence based on previous research associating them with low undifferentiated profiles (Pusateri, 1995). A growing body of literature suggests that self-efficacy is related to interests (Donnay & Borgen, 1999; Harmon, Borgen, Berreth, King, Schauer, & Ward, 1996; Rottinghaus, Betz, & Borgen, 2003; Rottinghaus, Larson, & Borgen, 2003). It seems, however, that few studies have examined relationships between confidence and the combination of differentiation and profile elevation (Pusateri, 1995). In the present study, the regression model was found to be statistically significant between gender, educational level, profile elevation, and differentiation (predictors) and confidence (criterion) ( $F [4, 85] = 15.466, p < .0001$ ). With gender excluded due to the lack of contribution to the model, the three-factor regression model was also statistically significant ( $F [3, 86] = 20.126, p < .0001$ ). Beyond statistical significance, consideration of clinical significance is important because it points to the applied value of results (Kazdin, 1999). When using statistics within the general linear model, it has become standard practice to report variance-accounted-for effect sizes to address clinical or practical significance (Vacha-Haase & Thompson, 2004). The three-factor regression model predicted 39.2% of the variance for confidence. Upon further analyses, it became clear that profile elevation contributed most to the variance in confidence (90.6%) ( $\beta = .608, r_s = .952$ .)

followed by educational level (14.3% ) ( $\beta = .196$ ,  $r_s = .379$ ) and differentiation (24%) ( $\beta = -.022$  ,  $r_s = .490$ ).

Profile elevation (highest GOT score) and differentiation were positively related to a measure of confidence (highest SCT score), hence, individuals who express greater frequency and amount of interest and have relatively more differentiated profiles on the SII may be more confident in their ability to be successful in occupational and leisure activities related to those interests. On the other hand, individuals who express low amounts of interests and have relatively less differentiated profiles on the SII may be more likely to lack confidence related to their ability to be successful in activities related to those interests. Consistent with previous research (Pusateri, 1995), educational level also predicted higher levels of confidence. Perhaps individuals who have more education have had opportunities to increase their interest-related confidence.

Research assumptions five and six indicated vocational identity would be significantly correlated with differentiation and profile elevation. Gender and educational level were considered as additional predictors of vocational identity based on previous research associating them with low undifferentiated profiles (Pusateri, 1995). Pusateri (1995) found a significant relationship between individuals with low undifferentiated profiles and lower scores on a measure of vocational identity. However, Leung et al. (1992) found that differentiation, profile elevation and vocational identity were not related. Consistent with Leung et al. (1992), the present study revealed that relationships between differentiation and profile elevation and vocational identity were not found to be statistically significant ( $F [4, 85] = 1.011$ ,  $p = .407$ ).

## Implications for Counseling

Most college students (53%) experience depressive symptoms sometime during their college years (Furr et al., 2001). According to the American College Health Association (2005), 10% of females and 8% of males reported experiencing depressive symptoms more than nine times during a 12-month period (2005). It seems likely, then, that individuals seeking career counseling may also be experiencing symptoms of depression. Researchers acknowledge that career counseling cannot be separated from a broader psychological context (Krumboltz, 1993; Lucas, 1992) and often recommend combining personal and career counseling strategies (Rak & O'Dell, 1994). Anecdotal evidence (Cynthia Bing, personal communication, July 17, 2005; Judith Grutter, personal communication, October 4, 2006) suggests practitioners experience individuals with relatively low profile elevation and undifferentiated profiles to have symptoms of depression. However, in the present study, relationships between differentiation and profile elevation and a measure of depressive symptomology were not found to be statistically significant. A gap exists between what seems to be experienced in counseling settings and what the current research has revealed regarding the nature of relationships between depressive symptomology and vocational interests. Strong Interest Inventory results that are undifferentiated and have relatively low profile elevation are often difficult to interpret (Sackett & Hansen, 1995). Authors of the SII manual encourage practitioners to explore a variety of reasons for such profiles including consideration of mood (Donnay et al., 2005). While researchers continue to try to uncover the nature of relationships between depressive symptomology and vocational interests, counselors are encouraged to neither assume nor deny the existence of depressive symptomology in relation to interest profiles lacking differentiation with relatively low profile



elevation. Rather, counselors are encouraged to assess if depressive symptomology exists and address such symptoms as a part of the career counseling process.

Using parallel measures of interests and confidence is a recent trend in career assessment (Donnay & Borgen, 1999), and confidence has been associated with low undifferentiated profiles (Pusateri, 1994). Therefore, in addition to examining depressive symptomology, a parallel measure of confidence was used to examine relationships between confidence and differentiation and profile elevation. In the present study, individuals who had relatively more differentiated profiles with higher profile elevation were more likely to be confident in their ability to be successful in occupational and leisure activities related to their highest GOT. In addition, individuals were more likely to express confidence in their interest-specific skills if they had higher levels of education. Conversely, individuals with undifferentiated profiles, lower profile elevation, and less education were less likely to be confident in their ability to be successful in occupational and leisure activities related to their highest GOT. Of the three predictors, profile elevation (highest GOT) on the SII predicted 90.6% of the variance in confidence (highest SCT). A recent metanalytic review of parallel measures of interests and confidence noted that 25 to 46% of the variance in interests and confidence and interest is shared (Rottinghaus, Larson, & Borgen, 2003). In the past, researchers have suggested that parallel interests are redundant measures (Tracey, 1997; Tracey & Ward, 1998), however, consensus seems to be that though interests and confidence share variance, they are distinct constructs (Donnay and Borgen, 1999) and are worthy of independent consideration.

In the present study, profile elevation contributed the most to the variance in confidence, followed by educational level and differentiation. Confidence represented individuals' subjective interpretation of their ability to successfully implement tasks associated with interests and,

therefore, confidence can be considered a measure of self-efficacy. Based on Bandura's theory of self-efficacy (1977), Hackett and Betz (1981) proposed that subjective interpretations of self-efficacy impact career development decision-making processes particularly in consideration of career options. Betz (1992) proposed that low efficacy related to vocational interests might impede career development and lead to less than optimal career decision-making. Betz, Harmon, & Borgen (1996) support the use of a parallel measure of confidence when administering interest inventories "to increase the educational and career options of individual clients and to stimulate the design of effective career interventions" (p. 97). Based on the results of the current study, practitioners are encouraged to consider self-efficacy expectations, especially when interpreting undifferentiated profiles with low profile elevation. Attempts at increasing interest-specific confidence may help generate additional career options for clients. For example, counselors could help these individuals participate in activities designed to increase interest-specific confidence.

Holland (1997) indicated that differentiation is an indirect measure of how well individuals define themselves, and he hypothesized that individuals with low undifferentiated profiles would more likely be young or inexperienced (Holland, 1985a). Consistent with previous research (Leung et al., 1992) vocational identity was not associated with differentiation and profile elevation. Although, vocational identity was not associated with interest differentiation and profile elevation in the present study, it seems to be a relevant consideration in career counseling. Intuitively, it seems that individuals who have high levels of vocational identity, that is, clear vocational goals and an understanding of how they want to express themselves occupationally, will likely navigate through a career counseling process more easily.

However, assessment and development of vocational identity should be considered separately from interest differentiation and profile elevation.

### Limitations of the Study

While treating variables as continuous represents a strength of the present study, isolating a clinically depressed group (e.g., individuals with BDI-II scores greater than 29) and analyzing relationships between differentiation and profile elevation might provide additional insight into their relationships. An additional limitation of this study is the correlational design. Causal relationships between independent and dependent variables cannot be identified. Therefore, the utility of the results may be questionable. Also, random sampling was not utilized and consequently, generalizability is limited.

### Recommendations for Future Research

Based on study results, recommendations for future research include the following:

1. Replicate the study using a larger sample size that includes a normal distribution of depression symptomology. A larger sample size will also allow for a more robust statistical analysis.
2. Investigate relationships between depression, differentiation and profile elevation with a clinically depressed sample.
3. Investigate causal direction of relationships between parallel measures of interests and confidence.
4. Using an experimental design, investigate strategies for increasing career-related confidence.
5. Career center personnel are encouraged to collect appropriate data related to instruments used in the center for research purposes.

APPENDIX A  
INFORMED CONSENT FORM

PRINCIPAL INVESTIGATOR: Greta A. Davis

TITLE OF PROJECT: Interest Differentiation and Profile Elevation: Investigating Correlates of Depression, Confidence, and Vocational Identity.

### INFORMED CONSENT

This Informed Consent will explain about being a research subject in an experiment. It is important that you read this material carefully and then decide if you wish to be a volunteer. The Informed Consent describes the procedures, benefits, risks, and discomforts of the study. It also describes your right to withdraw from the study at any time.

#### PURPOSE:

The purpose(s) of this research study is to investigate relationships between emotions and interests. The results of this research will be used to help counselors be better equipped to identify how emotions are related to career counseling.

#### DURATION:

If you choose to participate, your participation will include completing online and paper-and-pencil assessments. It will take you approximately 1.5 hours to complete the assessments.

#### PROCEDURES:

The procedures, which will involve you as a research subject, include taking three assessments. Your counselor will provide you with three assessments including the Combined Strong Interest Inventory and Skills Confidence Inventory (SII-SCI), My Vocational Situation (MVS) and Beck Depression Inventory, Second Edition (BDI-II). The SII-SCI is a tool for exploring occupational, educational, and leisure interests and how confidence may impact your choices. The MVS is an assessment to help identify what kinds of career needs you have and what would be most appropriate for you in career counseling including exposure to the world-of-work, occupational information, and/or reassurance. The BDI-II is an assessment to identify depressive symptoms you may be experiencing that may influence the career counseling process.

You will complete the assessments at the counseling center where you are requesting services sometime after your first appointment or sometime before your second or third appointment. Your assessments will be scored by your counselor, and your counselor will provide you with the results of the assessments.

#### POSSIBLE RISKS/DISCOMFORTS:

The possible risks and/or discomforts of your involvement are minimal. Some individuals may feel upset or disturbed after reading some of the questions on the assessments. If you experience discomfort during the assessment process please notify your counselor and you will have the opportunity to discuss your concerns with a counselor.

#### POSSIBLE BENEFITS:

The possible benefits of your participation are that you may better understand your occupational, educational, and leisure interests and emotions and this may benefit you in the counseling process both personally and vocationally.

#### ALTERNATIVE PROCEDURES / TREATMENTS:

The alternative procedures / treatments available to you if you elect not to participate in this study include using the career counseling and assessment services provided the Counseling Services at UTA.

#### CONFIDENTIALITY:

Every attempt will be made to see that your study results are kept confidential. A copy of the records from this study will be stored in locked filing cabinet in Counseling Services at UTA for at least three (3) years after the end of this research. The results of this study may be published and/or presented at meetings without naming you as a subject. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the UTA IRB, the FDA (if applicable), and personnel particular to this research (individual or department) have access to the study records. Your (e.g., student, medical) records will be kept completely confidential according to current legal requirements. They will not be revealed unless required by law, or as noted above.

#### FINANCIAL COSTS:

There are no financial costs to you as a participant.

#### CONTACT FOR QUESTIONS:

If you have any questions, problems or research-related medical problems at any time, you may call Greta A. Davis at [redacted] or Dr. Dennis Engels at 940-565-2918. You may call the Chairman of the UTA Institutional Review Board at 817/272-1235 for any questions you may have about your rights as a research subject. This research study has also been reviewed and approved by the University of North Texas Institutional Review Board (UNT IRB). Contact the UNT IRB at 940-565-3940 or sbourns@unt.edu with any questions regarding your rights as a research subject.

#### VOLUNTARY PARTICIPATION:

Participation in this research experiment is voluntary. You may refuse to participate or quit at any time. If you quit or refuse to participate, the benefits (or treatment) to which you are otherwise entitled will not be affected. You may quit by calling Greta A. Davis, whose phone number is [redacted]. You will be told immediately if any of the results of the study should reasonably be expected to make you change your mind about staying in the study.

By signing below, you confirm that you have read or had this document read to you. You will be given a signed copy of this informed consent document. You have been and will continue to be given the chance to ask questions and to discuss your participation with the investigator.

You freely and voluntarily choose to be in this research project.

\_\_\_\_\_  
SIGNATURE OF VOLUNTEER

\_\_\_\_\_  
DATE

For the Principal Investigator or Designee:

By signing below you certify that you have reviewed the contents of this form with the person signing above and you believe the person understood the explanation. You have explained the known benefits and risks of the research.

PRINCIPAL INVESTIGATOR OR DESIGNEE: \_\_\_\_\_

\_\_\_\_\_  
DATE

Cynthia Bing  
Jason Berman  
Ken Farr  
LeeAnne Harker  
Christine Holberg  
Lori Leach  
S. Ellen Myers  
Rhonda Triana  
Adria Villareal

APPENDIX B  
BACKGROUND INFORMATION SHEET



**Participant Number:** \_\_\_\_\_

**Background Information**

**Age:** \_\_\_\_\_

**Gender:**

- ☐ Male
- ☐ Female

**Educational Level:**

- ☐ Freshman (0 – 30 college hours completed)
- ☐ Sophomore (31 – 60 college hours completed)
- ☐ Junior (61 – 90 college hours completed)
- ☐ Senior (more than 90 college hours completed)
- ☐ Graduate (0 to 12 graduate hours completed)
- ☐ Graduate (13 to 24 graduate hours completed)
- ☐ Graduate (more than 24 graduate hours completed)

**Race/Ethnicity:**

- ☐ Caucasian
- ☐ African-American
- ☐ Hispanic American
- ☐ Asian American
- ☐ American Indian
- ☐ Other: \_\_\_\_\_

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